APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/767,190	01/30/2004	William Setter	119508-00102	4584

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BLANK ROME LLP
600 NEW HAMPSHIRE AVENUE, N.W.
WASHINGTON, DC 20037

EXAMINER
CHUKWURAH, NATHANIEL C

ART UNIT	PAPER NUMBER
3721	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/767,190	SETTER ET AL.
	Examiner	Art Unit	
	Nathaniel C. Chukwurah	3721	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>16 April 2007</u>.

2a)☒ This action is **FINAL**.　　2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-26</u> is/are pending in the application.

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-26</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>30 January 2004</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a)☐ All　b)☐ Some * c)☐ None of:

　　　1.☐ Certified copies of the priority documents have been received.

　　　2.☐ Certified copies of the priority documents have been received in Application No. _____.

　　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO/SB/08)
　　Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
　　Paper No(s)/Mail Date. _____ .
5)☐ Notice of Informal Patent Application
6)☐ Other: _____ .

DETAILED ACTION

1.   This office action is in response to the Arguments/Remarks filed on 4/16/2007.

Applicant's arguments, see Remarks, filed 4/16/2007, with respect to 112 second

paragraph have been fully considered and are persuasive. The 112 rejection has been withdrawn.

Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3.   Claims 1-3, 7-13 and 17-23 are rejected under 35 U.S.C. 102(b) as being anticipated by

Giardino et al. (US 6,311,786).

With regard to claim 1, Giardino et al. discloses a method comprising the step of:

applying a toque pulse to a fastener (col. 3, lines 10-13), detecting a signal representing the time-

amplitude waveform of the toque pulse (col. 3, lines 60-63), fitting an equation that

approximates the time amplitude waveform (col. 4, lines 7-15), processing the equation to

determine the torque being applied to the fastener (col. 4, lines 16-49), comparing the torque to a

pre-set torque objective (col. 5, lines 29-38) and applying a second torque pulse to the fastener if

torque is less than pre-set torque objective.

While Giardino et al. do not expressly state that the method includes fitting an equation

that approximates the time-amplitude waveform by selecting one mathematical expression from

a set of mathematical expressions and selecting at least one parameter that describes the torque

pulse from a set of parameters. Giardino et al.'s method for determining the torque applied to a

fastener is capable of having more preprogrammed set of mathematical torque expressions in

addition to torque equation and selecting at least one parameter that describes the torque pulse

from a set of parameters which describes the torque pulse from a set of parameters.

Further, Giardino et al.'s method includes impulse equation, which is used to calculate

torque and Giardino et al.'s method use equation representing angular momentum to also

calculate torque as shown in column 4.

With regard to claim 2, Giardino et al. shows an equation that includes positive

amplitude; wherein as I is defined as product of force and time (see col. 4, lines 7-14), when an

impact is detected, tf is set to be impact plus some number of clock counts which is equivalent as

in claimed.

With regard to claim 3, Giardino et al. shows a linear equation $T=d(Ir)/dt$, which detects

impulse which measures torque at different point in time over a period of time and provide the

desired torque.

With regard to claim 7, Giardino et al. show the step of selecting the torque pulse from

two parameters (impact number and time duration) that describes torque pulses from a set of

parameters (col. 4, lines 29-62).

With regard to claim 8, Giardino et al. shows a signal producing magneto-elastic torque

transducer (37 magneto-elastic ring) coupled to the shaft (18) and induction coil (32 coupling)

proximate shaft (front end of the shaft).

With regard to claim 9, Giardino et al. shows an impact tool (10).

With regard to claim 10, Giardino et al. shows a wrench (10).

With regard to claim 11, Giardino et al. discloses a method comprising the steps of:
applying a plurality of toque pulse to a fastener (col. 3, lines 10-13), detecting a signal
representing the time-amplitude waveform of the toque pulse (col. 3, lines 60-63), converting the
signals into mathematical expression (col. 4, lines 10-28), fitting an equation that approximates
the time amplitude waveform (col. 4, lines 7-15), processing the equation to determine the torque
being applied to the fastener (col. 4, lines 16-49), and the data gathered and/or calculated is
displayed and /or written to data storage, as desired as in step 20 and turning off the green light
(col. 6, lines 17-18 and 20), which is equivalent of terminating the fastener tightening sequence
as claimed.

While Giardino et al. do not expressly state that the method includes fitting an equation
that approximates the time-amplitude waveform by selecting one mathematical expression from
a set of mathematical expressions and selecting at least one parameter that describes the torque
pulse from a set of parameters. Giardino et al.'s method is capable of having more
preprogrammed set of mathematical torque expressions so as to select mathematical torque
expressions for each torque pulse.

Further, Giardino et al.'s method includes impulse equation, which is used to calculate
torque and Giardino et al.'s method use equation representing angular momentum to also
calculate torque as shown in column 4.

With regard to 12, Giardino et al. shows an equation that includes positive amplitude;
wherein as I is defined as product of force and time (see col. 4, lines 7-14), when an impact is
detected, tf is set to be impact plus some number of clock counts which is equivalent as in
claimed.

With regard to claim 13, Giardino et al. shows a linear equation T=d(Ir)/dt, which detects impulse which measures torque at different point in time over a period of time and provide the desired torque.

With regard to claim 17, Giardino et al. shows the steps of converting the signal into an equation representing the torque pulses from two parameters (impact number and time duration) that described torque pulses from a set of parameters (col. 4, lines 29-62).

With regard to claim 18, Giardino et al. shows a signal producing magneto-elastic torque transducer (37 magneto-elastic ring) and induction coil (32 coupling) proximate shaft (front end of the shaft).

With regard to claim 19, Giardino et al. shows a torque impact tool (10).

With regard to claim 20, Giardino et al. shows a wrench (10).

With regard to claim 21, Giardino et al. discloses an apparatus comprising an impact tool (10), a shaft (18) operatively connected to the impact tool, a torque transducer (37) coupled to the tool, a sensor (30) proximate the impact tool, a controller (50) enabling the impact tool to apply one or more pulses to the shaft (18), and which is capable of receiving waveform signals from sensor (30), monitors and conditions the signals, selects an equation that represents the signals, processes the equation to obtain torque on the fastener and disables the impact tool.

With regard to claim 22, Giardino et al. shows a pneumatic torque wrench (10).

With regard to claim 23, Giardino et al. shows linear equation; $I=\int Fdt$; $T=d(Ir)/dt$.

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5.   Claims 4-6, 14-16 and 24-26 rejected under 35 U.S.C. 103(a) as being unpatentable over Giardino et al.

With regard to claims 4, 5, 14, 15, 24 and 25, Giardino et al. disclose all claimed subject matter but lack the specific teaching of an equation showing a correlation coefficient; however, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the data processing unit (50) of Giardino et al. with the capability of determining correlation coefficient through an equation since the apparatus of Giardino et al. anticipates the claimed structure and method for determining torque applied to a fastener.

With regard to claim 6, 16 and 26, Giardino et al. disclose all claimed subject matter but lack the specific teaching of a non-linear equation for torque pulses, however, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the data processing unit (50) of Giardino et al. with the capability of representing the torque pulses with non-linear equation since the apparatus of Giardino et al. anticipates the claimed structure and method for determining torque applied to a fastener.

Response to Arguments

6.   Applicant's arguments filed 4/16/2007 have been fully considered but they are not persuasive.

With respect to claim 1, 11 and 21 applicant argues that Giardino et al. fail to disclose, teach or suggest the step of fitting an equation that approximates the time-amplitude waveform

by selecting one mathematical expression from a set of mathematical expressions and selecting

at least one parameter that describes the torque pulse from a set of parameters.

It is the Examiner's position that, as shown in the rejection above, Giardino et al.'s

method for determining the torque applied to a fastener is capable of having different

preprogrammed sets of mathematical torque expressions and selecting at least one parameter that

describes the torque pulse from a set of parameters which describes the torque pulse from a set of

parameters because Giardino et al.'s method includes using impulse and angular momentum

equations to calculate torque as shown in column 4, which considered sets of mathematical

torque expressions.

Conclusion

7.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing
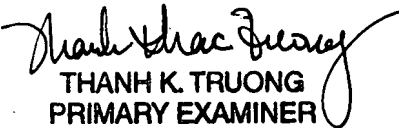
date of this final action.

8.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathaniel C. Chukwurah whose telephone number is (571) 272-4457. The examiner can normally be reached on M-F 6:00AM-2:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rinaldi Rada can be reached on (571) 272-4467. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

9.   Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

NC

July 9, 2007.

THANH K. TRUONG
PRIMARY EXAMINER
TECHNOLOGY CENTER 3700